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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/207,546	12/08/98	DEGENDT S	98-162-B

IM62/0830
MCDONNELL BOEHNEN HULBERT & BERGHOFF
32ND FLOOR
300 SOUTH WACKER DRIVE
CHICAGO IL 60606

EXAMINER	
AHMED, S	
ART UNIT	**PAPER NUMBER**
1746	6

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary	Application No. 09/207,546	Applicant(s) DeGendt et al
	Examiner Shamim Ahmed	Group Art Unit 1746

☐ Responsive to communication(s) filed on _____ .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-39* is/are pending in the application.

Of the above, claim(s) *1-26 and 36-39* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *27-35* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *4 & 5*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Election/Restriction

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

A. Removing organic contaminants using a gas mixture (claims 1-26 and 36-39).

B. Removing organic contaminants using a fluid (claims 27-35).

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 27 is generic.

Applicant is advised that a response to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Amir Penn on 8/21/2000 a provisional election was made with traverse to prosecute the invention of Specie B, claims 27-35. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-26 and 36-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 27 and 29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for filling the tank with the liquid recited on page 15, lines 9-15 in the specification, does not reasonably provide enablement for "filling the tank with a fluid " in claims 27 and 29, line 4. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification recites very specific amount of liquid or fluid is filled to achieve the desired cleaning process, which makes the claims broader than enabling disclosure.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakon et al (USP 5,560,857) in view of kern (Hand book of Semiconductor Wafer Cleaning Technology) and further in view of Sehested et al (J Phys. Chem.).

Sakon et al disclose a cleaning solution comprises an aqueous solution containing hydrogen peroxide and an additives such as acetic acid (col.3, lines 31-50).

Sakon et al also disclose that the cleaning temperature should be in the range of 50-90C, which is less than boiling point of the solution (col.4, lines 17-19).With the respect of claims 28 : It would have been obvious to have the fluid temperature is higher than the substrate temperature. Sakon et al further disclose that the additive is added about 0.02 mol/liter (See Table 1). Sakon et al remain silent about the additive, acetic acid is working as OH radical scavenger. It would have been obvious that the acetic acid acts as OH radical scavenger in aqueous ozone solution because it is well know stabilizer of aqueous ozone as taught by Sehested et al (see the introduction , page 1005).

Sakon et al use hydrogen peroxide to remove contaminants but fail to teach ozone is used to remove contaminants from a substrate.

It would have been obvious to one having ordinary skill in the art to replace hydrogen peroxide with ozone because both are functionally equivalent as taught by Kern (page 52, line 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Kern and Sehested et al's teaching into the method for removing contaminants as taught by Sakon et al for effective cleaning process for semiconductor substrate.

By doing so, one could have a substrate, which is free of organic contaminants and as well as any other impurities.

8. Claims 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al in view of Heyns et al .

Ohmi et al disclose a method for removing organic contaminants from a silicon surface using ozone-injected pure water, wherein achieve a native oxide growth on the substrate.

Ohmi et al also disclose that the native oxide is removed using dilute HF (hydrofluoric acid) (see page 805).

Ohmi et al fail to disclose the drying process after removal of the native oxide formed on the silicon surface.

However, Heyns et al disclose a new wet cleaning process, wherein the formed native oxide is removed and then a drying process for the silicon surface is introduced to avoid further pretreatment of the surface (see paragraph 8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Heyns et al's teaching into Ohmi's method to avoid further pretreatment as taught by Heyns et al.

9. Claims 29, 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyns et al in view of Sakon et al (5,560,857) and further in view of Sehested et al.

Heyns discussed above in paragraph No. 8 Heyns et al further disclose that oxide can be grown using ozonated deionized water or and hydrogen peroxide based mixture (see paragraph No 8) but fails to teach the addition of an additive acting as a scavenger.

However, Sakon et al disclose a cleaning solution comprises an aqueous solution containing hydrogen peroxide and an additives such as acetic acid (col.3, lines 31-50).

Sakon et al remain silent about the additive, acetic acid is working as OH radical scavenger. It would have been obvious that the acetic acid acts as OH radical scavenger in aqueous ozone solution because it is well know stabilizer of aqueous ozone as taught by Sehested et al (see the introduction , page 1005).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of claimed invention to employ Sakon and Sehested et al's teaching into Heyns et al's method for stabilizing the aqueous ozone solution as taught by Sehested et al.

Double Patenting

10. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

11. Claim 27 is provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 49 of copending Application No. 09/022,834. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible

harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claim 27 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 60 of copending Application No. 09/022,834. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 27 of the instant case differs from the claim 60 of the copending Application No. 09/022,834 is that of the concentration of the additive in the fluid is not limited. It appears claim 60 broadly claims any concentration of the additive and hence embraces the claimed limitation.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claims 27-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 27-28 of copending Application No. 09/002,834. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to use fluid as a liquid.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. For the purpose of a compact prosecution the non-elected Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 49 or 60 of copending Application No. 09/002,834. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to use fluid as a gaseous mixture.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Remarks

Though Carter et al (6,080,531) is not a prior art but disclose a method of removing organic contaminants in which a treating solution comprises water, ozone a OH radical scavenger such as acetic acid is used (specially see the claims 17-18).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (703) 308-4333. The fax phone number for this Group is (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

SA

August 28, 2000

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700